16 NOV 1983

ROUTING AND TRANSMITTAL SLIP

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Done 17 NOV 1983

REMARKS

An excerpt from text book on subject of industrial health and safety. The kind of thing we are considering in putting Safety Staff with OMS [redacted]

Does OMS & Saftey have copies? / They will receive [redacted]

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Production/operations management

EIGHTH EDITION

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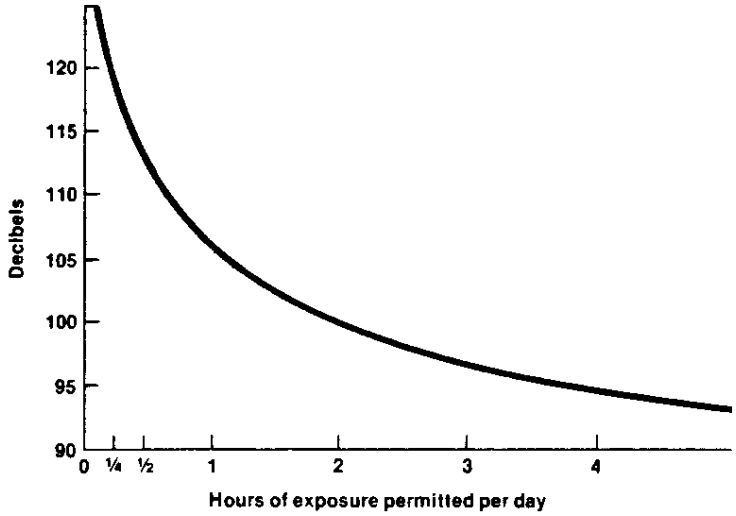
FIGURE 16–4
Legally permissible noise limits for employee exposure



reduced, or confined to limited areas, thus reducing harmful effects. Noise from old and worn equipment can be reduced by putting in new and better fitting bearings and parts. Noise from impacts made by stamping dies is difficult to control, so it is best to locate these machines off by themselves. Vibration from heavy equipment can be minimized on the ground floor by mounting heavy machines on separate foundations with small spaces between the foundation and the regular floor.

On upper floors other methods have to be used. Many kinds of vibration isolators are used. Machine mountings are made of springs, rubber, felt, cork, and other elastic materials. Suspension arrangements are also sometimes used. These methods of vibration control are in addition to vibration reducers built into the equipment itself. In the machines, vibration and noise may be reduced by pads, snubbers, bumpers, flexible joints, shaft seals, and other means.

Noise and vibration may be airborne, structurally borne, or may be transmitted by diaphragms. If the source of the noise can't be eliminated, damping methods will have to be directed at the means by which the noise is conveyed. Baffles, curtains, and acoustically covered walls will reduce airborne noise or vibration. Flexible mounts will reduce the amount conveyed by the machine structure. Heavy concrete masses with their high inertia reduce vibration. If walls and ceilings tend to act as diaphragms transmitting noise, soundproofing acoustical materials will help.

All of these noise reduction methods cost money, and it has been estimated that meeting OSHA levels in the late 1970s cost nearly $15 billion. The ultimate cost could double if the Environmental Protection Agency is able to enforce its proposed 85-decibel standard.

These cost estimates may be on the high side. Armstrong Cork reports that it can bring a medium-sized metal-working plant's noise level down to 85 decibels for about $20,000. Armstrong sells a "Noise Control Package," which consists of strategically placed hanging wall panels, noise protection screens, wedge-shaped sloped noise absorbers, baffles, and vibration damping tile.[8]

HEALTH IMPAIRMENT

In the past, safety concern was almost wholly directed at reducing accidents, with little attentio

[8] Reported in "Sponging Up Plant Noise," *Factor* August 1975, pp. 25–27.

being directed at job-induced health impairment. There were, however, a few exceptions, such as in the case of silicosis, which caused lung damage to coal miners, radium burns of workers putting illuminated numbers on clock dials, and lead poisoning in the paint industry.

Now, however, with more years of experience and better detection research relating cause and effect, health hazards are being found in more places. Many of these had gone unrecognized before because so many situations cause health impairment only over a long time period of exposure.

It is now known that there are health hazards, including a great incidence of cancer, among workers who work with polyvinyl chloride, asbestos, certain insecticides, and in the coke-making part of the steel industry. Hazards have also been found in the use of beryllium and other chemicals.

Since some of the disabilities are so slow developing and since people not associated with these industries also have cancer and other of the job-related impairments, it is difficult to evaluate the various hazards. The hazards in the making of polyvinyl chloride seem, however, to be well established, and its manufacturing processes are now closely regulated.[9] In addition, NIOSH (OSHA's health department) estimated that coke-oven workers were ten times more likely to get lung cancer than other steelworkers; the risk of asbestos workers was one in five before safeguards were installed.[10]

OSHA personnel have been trying to find out what levels of exposure are dangerous so that standards can be set to confine exposure to safe hazard limits over a period of time. At the start, since the cumulative effects of long-time exposure to small amounts of a hazard are not known, the initial standards may be overly stringent. These can be relaxed if long experience indicates that they are overly restrictive. By the late 1970s several hundred standards related to job-induced health hazards had already been set. These include regulations covering the manufacture and processing of such items as chloroform, mercury, sulphuric acid, carbon monoxide, silica, and even cotton dust.

The costs of health impairment protection

The costs of health impairments caused by working conditions have, in the past, been much less than the costs of injuries from accidents, but they are going up more rapidly. Impairments are usually uncomfortable and sometimes seriously so, but working-age people seldom die from them. The costs of individual cases of health impairment sometimes continue for a long time so individual cases can easily cost more than most accident injury cases.

Two other developments have increased their total costs even more. First, workers who develop arthritis, lower back pains, high blood pressure, migraine headaches, alcoholism, and any number of other ailments have been blaming their jobs for the ailments. (Air traffic controllers are vocal on this point.) And it is true that conditions can be caused by or made worse by the stresses of life, including working conditions. Requests for extra compensation based on such claims are not always approved, but they are approved often enough to contribute to the rapid rise in the costs of health impairment.

Second, former employees, now retired, sometimes claim that their present disabilities—often of the kind associated with growing old—were caused by job conditions years earlier. These claims, like those of present employees, are often approved—again increasing the costs of health impairment.

Financial liability

Employers are financially liable for accidents and for many work-induced illnesses. Injured workers are usually paid by workers' compensation.

The amount of the compensation is spelled out in each state's law in the form of money awards per week for each kind of injury. More serious injuries call for larger weekly payments and for more weeks, perhaps up to several years, and in some cases, for life. Workers' compensation laws

[9] The health problems in this industry are reported in Paul H. Weaver, "On the Horns of the Vinyl Chloride Dilemma," *Fortune*, October 1974, pp. 150 ff.

[10] See Denise Brookman, "Gearing up to a New OSHA," *Purchasing*, April 26, 1977, pp. 32–39.

specify the payments that workers are entitled to and at the same time they usually do not allow lawsuits for higher amounts.

The erosion of the value of compensation benefits because of inflation has made most of them quite inadequate. There always seems to be a lag in adjusting the amounts of the awards upward fast enough to keep up with inflation. Furthermore, the amounts of compensation vary a great deal from state to state. In Massachusetts, the loss of a hand brings compensation of $5,200. In Michigan it is $39,800. Federal employees are covered by a different law: their hands are worth $167,200.[11]

In recent years, the low payments and prohibition against suing the employer have generated a flood of lawsuits directed against the manufacturer of the machine or process on which the accident occurred. Many of these lawsuits have resulted in very high awards, which in turn has skyrocketed the costs of insurance. Some small companies have gone out of business because they can no longer buy insurance at reasonable rates.

Obviously, under these conditions it is easy to appreciate that employers who manufacture equipment are just as anxious as OSHA commissioners to eliminate hazards.

REVIEW QUESTIONS

1. Classify the kinds of safety equipment commonly used in industry.
2. What kinds of safety devices are there to keep people's hands out of the die in stamping machines?
3. Who is commonly responsible for managing safety and health in an organization?
4. Are accident prevention programs generally effective in reducing accidents? What makes good programs work?
5. What are the general powers of OSHA?
6. What is the current noise standard which is being enforced by OSHA?
7. How can noise be controlled in industry?

QUESTIONS FOR DISCUSSION

1. Should producers of consumer products and of machinery be liable for potential hazards? Discuss.
2. How far does a company's responsibility extend in the matter of safety for workers? Does it cover the workers being required to use safe methods? Or does it stop with the company providing safe working conditions?
3. How can an employer get workers to do their work safely? What problems must be solved?
4. What causes accidents: hazards or people? Discuss.
5. Does a person who is hurt while disobeying company safety rules get workers' compensation benefits? What is the logic behind this practice?
6. Can an injured worker covered by workers' compensation sue anyone? Discuss.
7. In a landmark Supreme Court decision, OSHA inspectors are now required to obtain a search warrant prior to visiting if companies insist. Would you insist? Discuss.

PROBLEMS

1. Visit a local manufacturing organization (or service), and write a brief report on their job safety and health program. How do they manage this function and what is their attitude toward OSHA?

2. Brown Manufacturing must decide which kind of safety device to install on a new metal stamping machine which is being installed. These devices are required to ensure that the operator's hands are out of the die area during the machine's stamping cycle. They have narrowed their choice to three alternatives: double button system (each hand must push a button to activate the machine); arm shackles which jerk hands out of the die area before the machine cycles; and the ultrasonic system which senses hands if they are in the danger area and stops the machine cycle. The per machine cost of these three devices and the cycle time per

[11] Payments for various injuries in all 50 states are given in *Analysis of Workers' Compensation Laws*, Chamber of Commerce of the United States, 1979, p. 20.